Multidimensional Gap Analysis to Diagnose Innovation Adoption in the Sanitation Sector of LDCs

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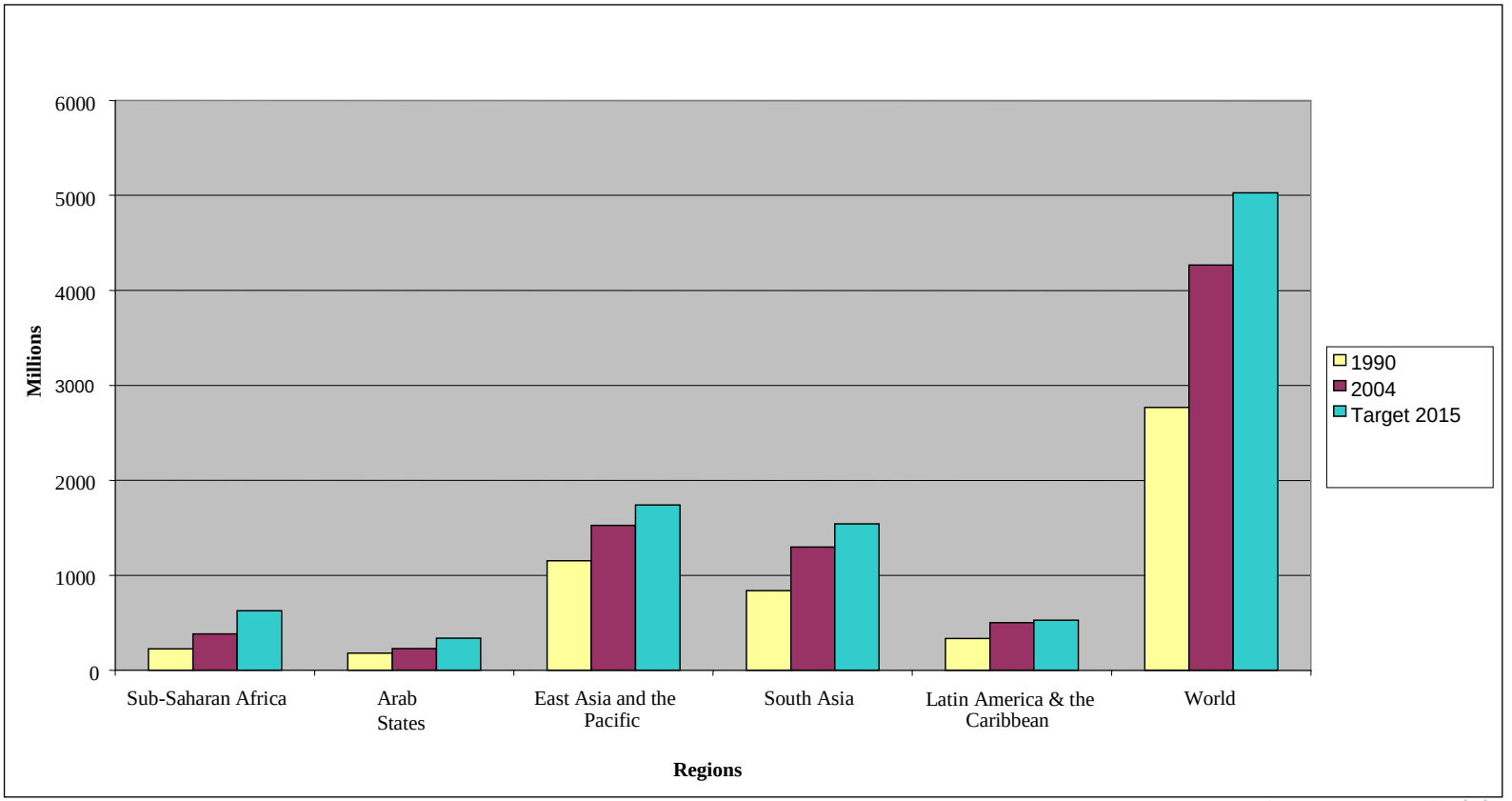
People with access to improved sanitation (millions)



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Ineffective Technology Transfer (TT) is due to:

- Lack of public accountability and feedback from users (Seppälä, 2002; Easterly, 2006).
- Prevalence of *technocentric* models of transfer focused mainly on the transferred hardware (Levin, 1993).
- Lack of focus on recipients' willingness/ability to incorporate changes implied by the process of adoption (Reddy and Zhao, 1990).

Looking more specifically in the sanitation sector:

- Supply driven approaches to technology transfer.
- No interest paid on assessment of recipients' needs.
- Frameworks are either overly ambitious or too context specific to be applied as a models.

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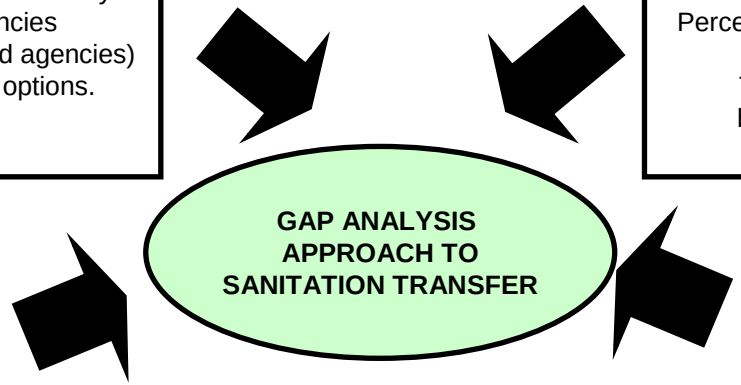
Limitations of previous TT models led to emergence of several approaches and frameworks that have influenced the development of the GAP Analysis approach.

Water technology/policy transfer in advanced countries
RECEPTIVITY MODEL
(Jeffrey and Seaton, 2004)
The willingness (or disposition) but also the ability (or capability) in different constituencies (individual, communities, organisations and agencies) to absorb, accept and utilize innovation options.

Information Systems
Technology Acceptance Model-TAM
(Davis, 1989)
Users' acceptance of a technology depends on their Perceptions about the system's ease of use (PEU) and its perceived usefulness (PU). These components affect the recipients' behavioural intentions to use the system.



Service management, Customer satisfaction, Marketing
SERVICE QUALITY MODELS
(Parasuraman et al., 1988)
The gap between product suppliers and consumers is the main determinant of the service quality problem. Consumers perceive quality as a result of a comparison between what they expect from the service provider and their perceptions of the performance of the company.

Environment, health and sanitation
SOCIAL MARKETING
(Cairncross, 2004)
Application of marketing principles to achieve social goals. It is based on an assessment of needs of both sides of the supply chain, producers and consumers. It also includes the promotion of services/products to users.

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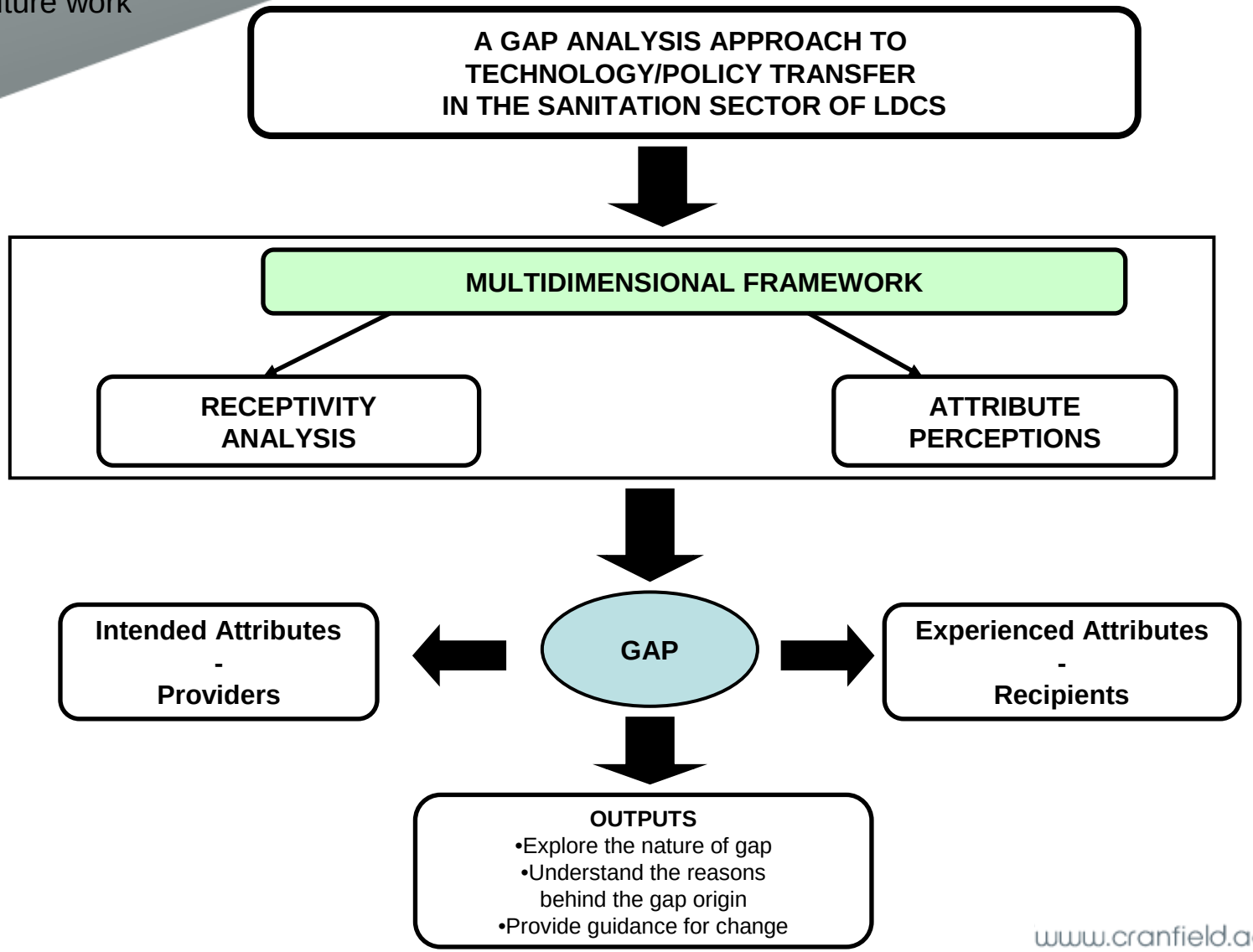

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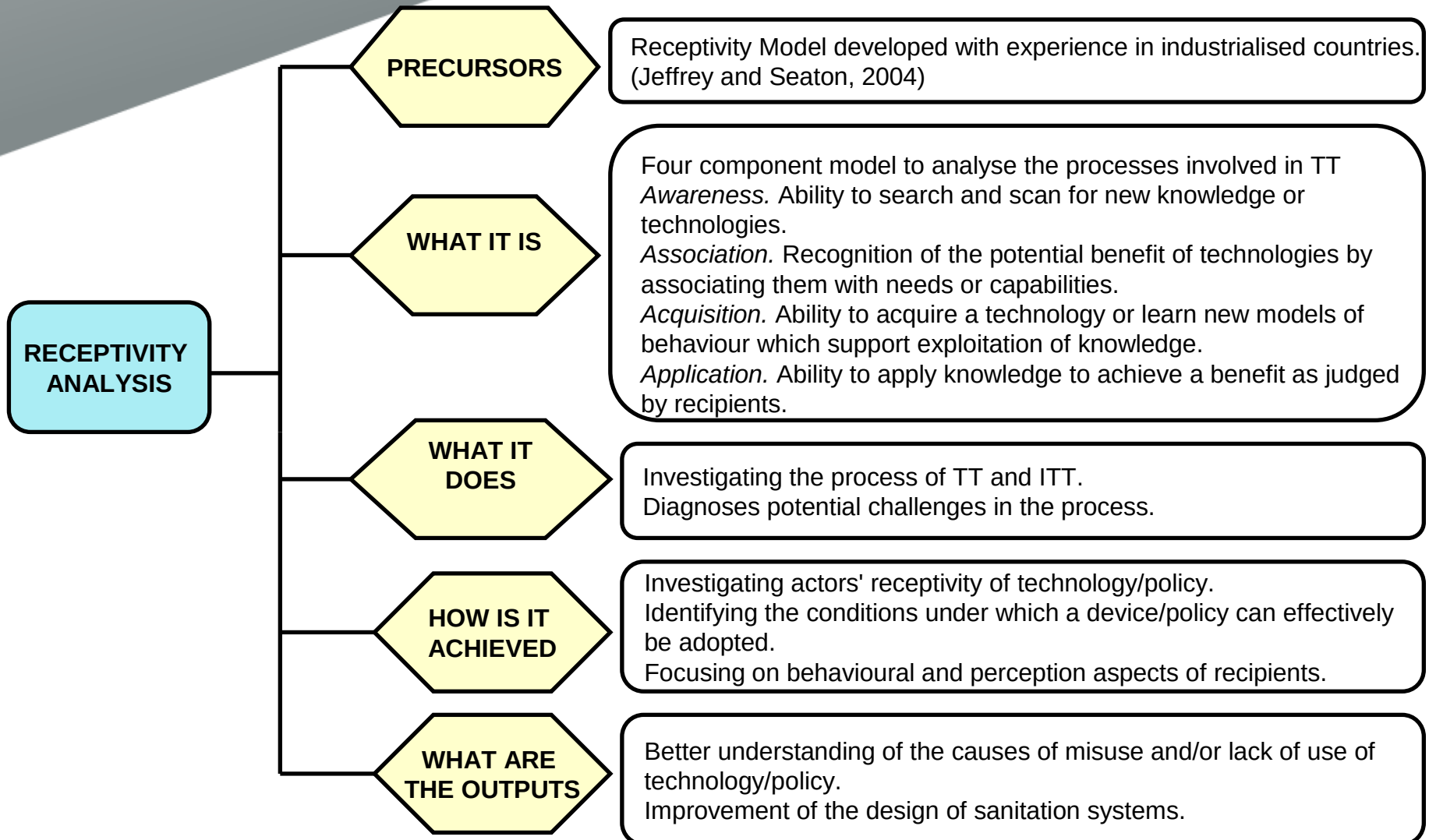

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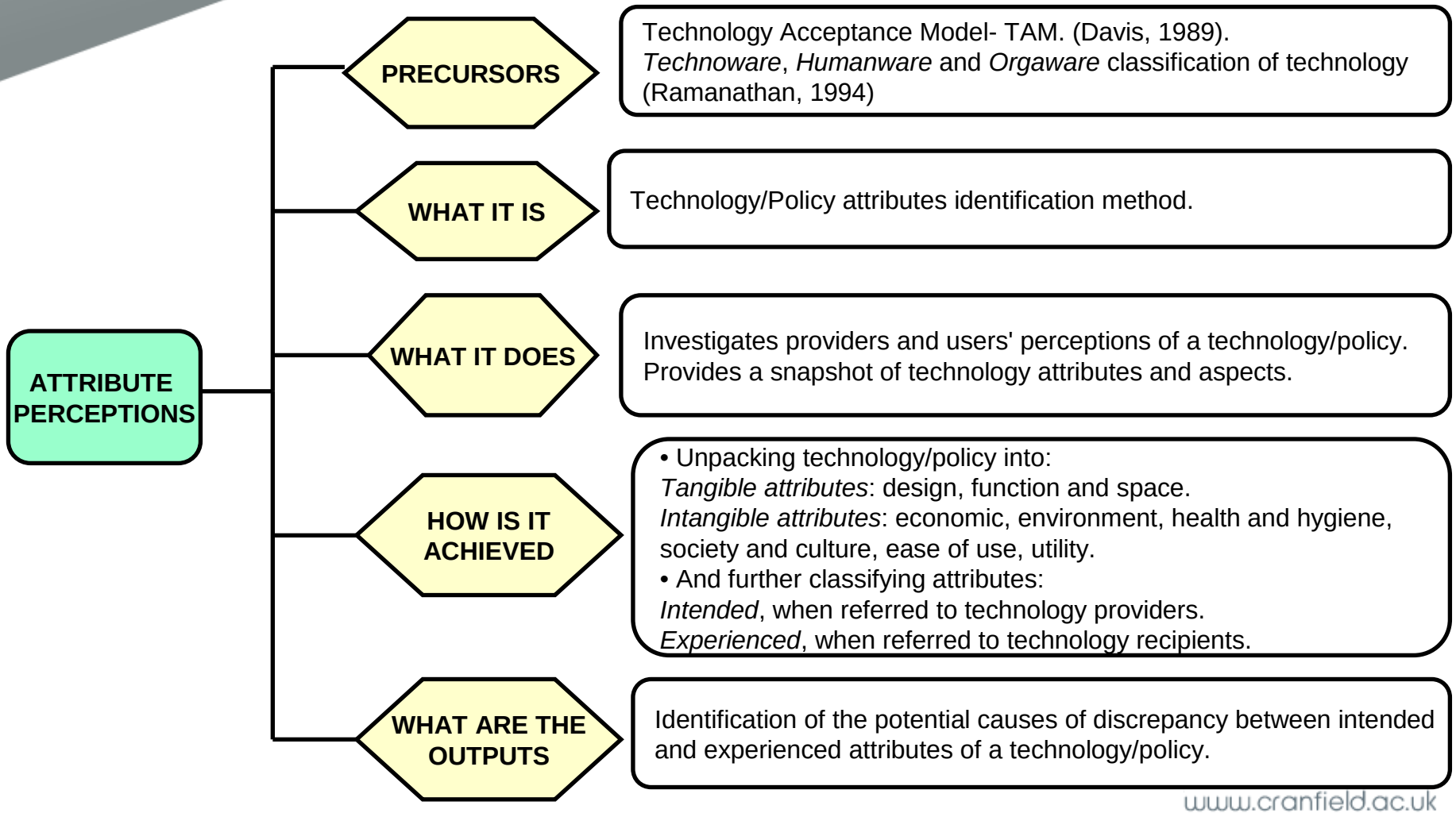

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Schematic view of a Urine Diversion toilet

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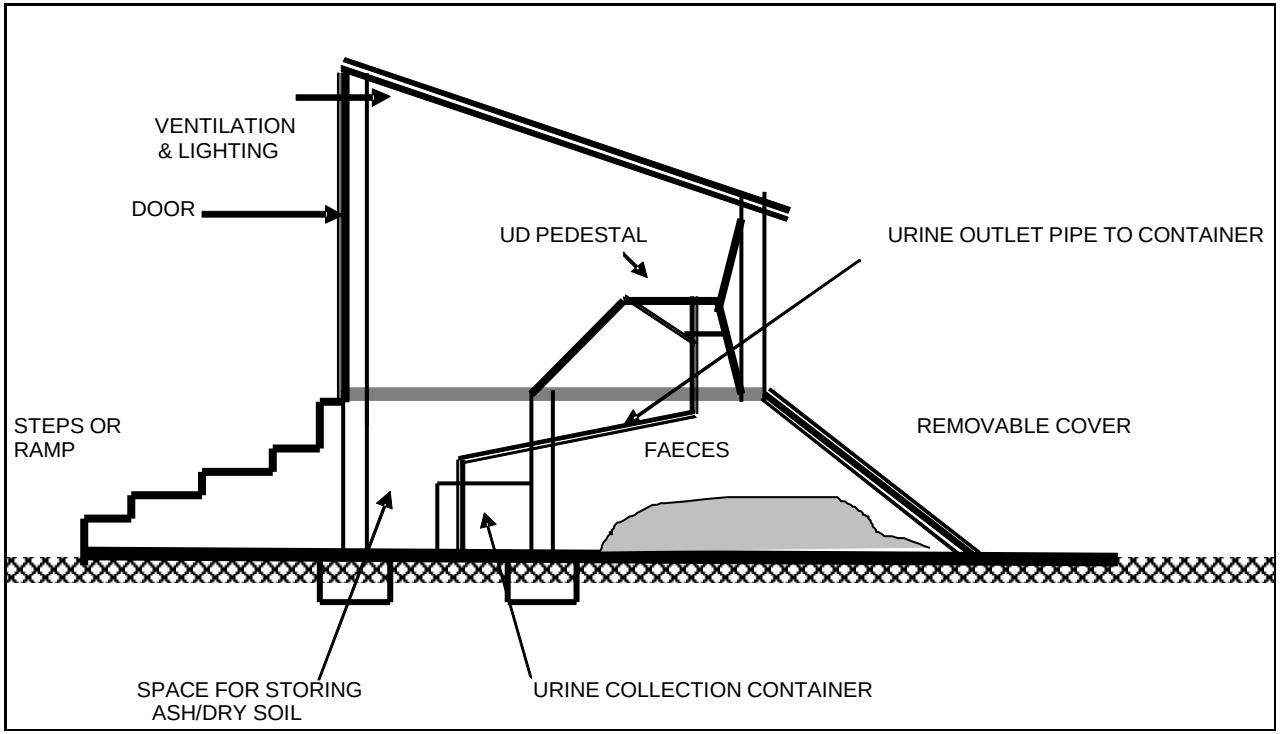

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Example of Receptivity Analysis applied to UD toilet

	PROVIDERS- INTENDED ATTRIBUTES	RECIPIENTS- EXPERIENCED ATTRIBUTES
AWARENESS	How are/were recipients to be made aware of the technology? Are you aware of the water and sanitation problems in the area where the technology was/is transferred?	Do you think there are any problems related to sanitation in your household or in the area where you live? Can you tell me about the technology? How does it work? How does it look like?
ASSOCIATION	What problems do you think the technology solve? What do you think are/were the main challenges in transferring the technology?	How does the technology help you in your daily routine? Do you think the technology/policy will bring any benefit to your life? If so, which ones?
ACQUISITION	**Did you plan any training activity for technology implementation? If so, what (seminars, house to house)? If no, why?**	**Do you find it easy to use the technology?** **How often have you used/been using the technology?** **Has the technology required any change in your habits?**
APPLICATION	What efforts have been done to facilitate technology adoption by recipients? Do you have any feedback mechanisms for the transferred technology?	Can you maintain the technology? Have you received any training in operating/maintaining the technology?

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Attribute perception applied to UD toilet

		PARTICIPANTS/ATTRIBUTES	
		Providers/Intended	**Recipients/ Experienced**
TECHNOLOGY ATTRIBUTES	**Design**	Two-chamber system that collects urine and faeces separately with a pedestal designed to allow urine to flow in a soakpit and be stored as a fertiliser. Faeces drop into a vault below the pedestal and dehydrate.	Not children friendly as pedestal is designed for adult use only.
	Function	Urine and faeces separately collected can be used for fertilising purposes.	Users are not careful and urinate into the faeces compartment.
	Space	Suitable for rocky or sandy places and close distance or inside dwellings.	Installation in rocky places is hindered by lack of access roads. Drillers cannot reach the communities.
	Economic	Moderate costs for installation operation and maintenance.	Recipients cannot afford the costs related to use and maintenance.
	Environment	**Urine can be used as soil fertiliser, thereby helping avoid use of chemical fertilisers.**	**Not ready to believe that urine has a fertilizing function, as they fear that it could be harmful for agriculture.**
	Health & Hygiene	No personal cleaning material should be thrown in the faeces container as this would hinder their dehydration.	Users do not agree with burning toilet paper as they fear of catching infections.
	Society & Culture	**A man must sit down when urinating if only one urinal is provided.**	**Men refuse to change their sanitation practices.**
	Ease of Use	Removal of dried faeces from full vault after six months can be easily operated by users	Users do not understand the process of faeces removal.
	Utility	If correctly used UD toilet can improve the level of hygiene of beneficiaries.	Recipients accept toilet but do not understand its utility as new alternative technology capable of saving water and of producing fertilizer for agriculture.

Source: data taken from Holden and Austin, 1999 and Austin and van Vuuren, 1999.

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The multidimensional framework

- Focuses on behavioural, psychological and socio-cultural aspects shaping attitudes.
- Applies not only to sanitation technologies but also to policies and services.
- Investigates both providers and recipients.

Therefore

- It can be employed as diagnostic tool for investigating context specific problems of sanitation technology transfer.
- It has the potential to be employed as anticipatory tool to predict and recommend certain agenda of action or decision-making process more than others.

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Future work will involve:

- Fieldwork in Mexico, India and South Africa will be conducted in the next year to verify the validity and robustness of the framework.
- Semi-structured interviews will be conducted with both sanitation technologies/policy providers and recipients.
- The fieldwork results will prompt further modification and adaptation of the framework to confirm its validity as tool for analysing water and sanitation challenges in LDCs.

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Thank you!

Questions….